

BD435G, BD437G, BD439G, BD441G

Plastic Medium-Power Silicon NPN Transistors

This series of plastic, medium-power silicon NPN transistors can be used for amplifier and switching applications.

Features

- Complementary Types are BD438 and BD442
- These Devices are Pb-Free and are RoHS Compliant*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|----------------|----------------------|--------------------------|
| Collector-Emitter Voltage BD435G BD437G BD439G BD441G | V_{CEO} | 32 45 60 80 | Vdc |
| Collector-Base Voltage BD435G BD437G BD439G BD441G | V_{CBO} | 32 45 60 80 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current | I_C | 4.0 | Adc |
| Base Current | I_B | 1.0 | Adc |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 36 288 | W W/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 3.5 | $^\circ\text{C/W}$ |

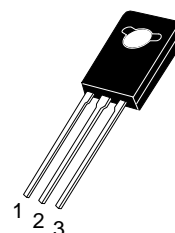
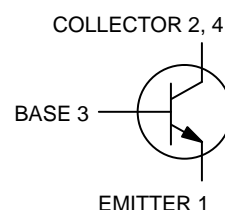
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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4.0 AMPERES POWER TRANSISTORS NPN SILICON



TO-225
CASE 77-09
STYLE 1

MARKING DIAGRAM



Y = Year
WW = Work Week
BD4xx = Device Code
xx = 35, 37, 37T, 39, 41
G = Pb-Free Package

ORDERING INFORMATION

| Device | Package | Shipping |
|---------|---------------------|---------------|
| BD435G | TO-225 (Pb-Free) | 500 Units/Box |
| BD437G | TO-225 (Pb-Free) | 500 Units/Box |
| BD437TG | TO-225 (Pb-Free) | 50 Units/Rail |
| BD439G | TO-225 (Pb-Free) | 500 Units/Box |
| BD441G | TO-225 (Pb-Free) | 500 Units/Box |

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|----------------------|----------------------|------------------|--------------------------|------|
| Collector–Emitter Breakdown Voltage (I _C = 100 mA, I _B = 0) BD435G BD437G BD439G BD441G | V _{(BR)CEO} | 32 45 60 80 | – – – – | – – – – | Vdc |
| Collector–Base Breakdown Voltage (I _C = 100 μA, I _B = 0) BD435G BD437G BD439G BD441G | V _{(BR)CBO} | 32 45 60 80 | – – – – | – – – – | Vdc |
| Emitter–Base Breakdown Voltage (I _E = 100 μA, I _C = 0) | V _{(BR)EBO} | 5.0 | – | – | Vdc |
| Collector Cutoff Current (V _{CB} = 32 V, I _E = 0) BD435G (V _{CB} = 45 V, I _E = 0) BD437G (V _{CB} = 60 V, I _E = 0) BD439G (V _{CB} = 80 V, I _E = 0) BD441G | I _{CBO} | – – – – | – – – – | 0.1 0.1 0.1 0.1 | mAdc |
| Emitter Cutoff Current (V _{EB} = 5.0 V) | I _{EBO} | – | – | 1.0 | mAdc |
| DC Current Gain (I _C = 10 mA, V _{CE} = 5.0 V) BD435G BD437G BD439G BD441G | h _{FE} | 40 30 20 15 | – – – – | – – – – | – |
| DC Current Gain (I _C = 500 mA, V _{CE} = 1.0 V) BD435G BD437G BD439G, BD441G | h _{FE} | 85 85 40 | – – – | 475 375 475 | – |
| DC Current Gain (I _C = 2.0 A, V _{CE} = 1.0 V) BD435G BD437G BD439G BD441G | h _{FE} | 50 40 25 15 | – – – – | – – – – | – |
| Collector Saturation Voltage (I _C = 2.0 A, I _B = 0.2 V) BD435G (I _C = 3.0 A, I _B = 0.3 A) BD437G, BD439G, BD441G | V _{CE(sat)} | – – | – – | 0.5 0.8 | Vdc |
| Base–Emitter On Voltage (I _C = 2.0 A, V _{CE} = 1.0 V) | V _{BE(on)} | – | – | 1.1 | Vdc |
| Current–Gain – Bandwidth Product (V _{CE} = 1.0 V, I _C = 250 mA, f = 1.0 MHz) | f _T | 3.0 | – | – | MHz |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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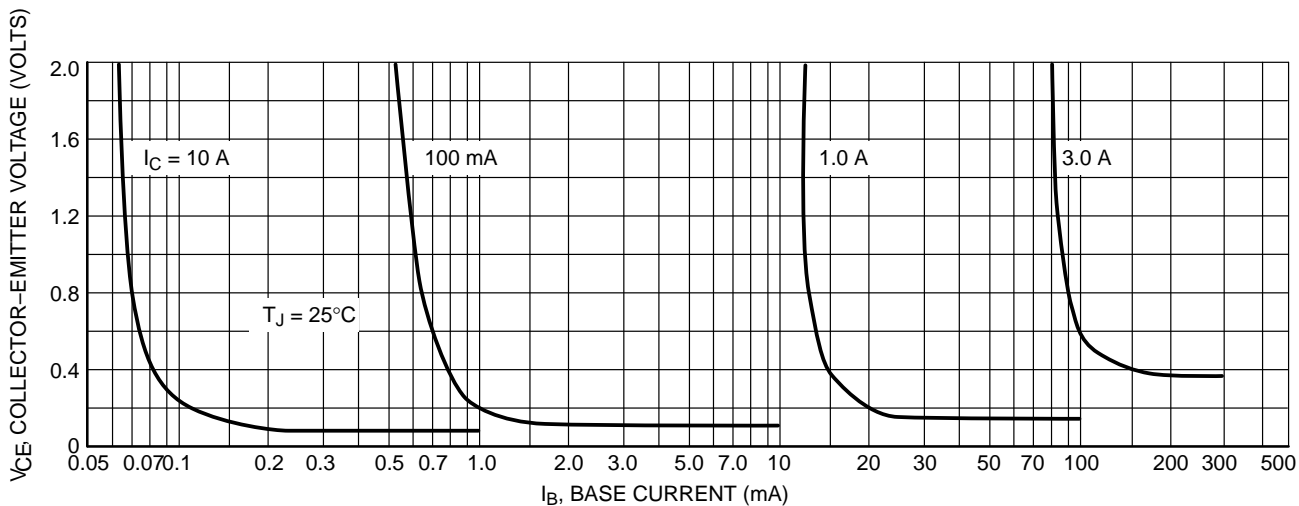


Figure 1. Collector Saturation Region

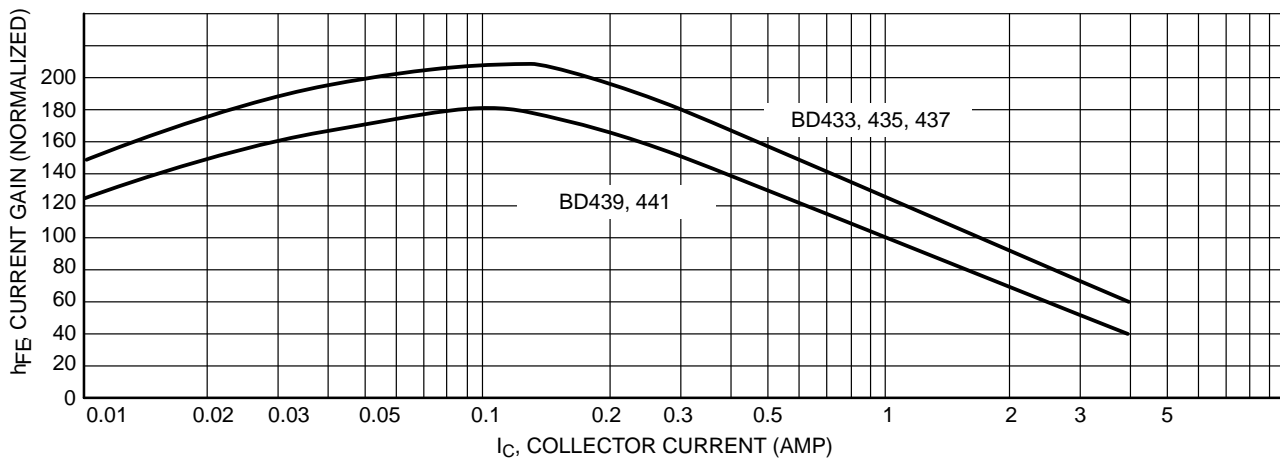


Figure 2. Current Gain

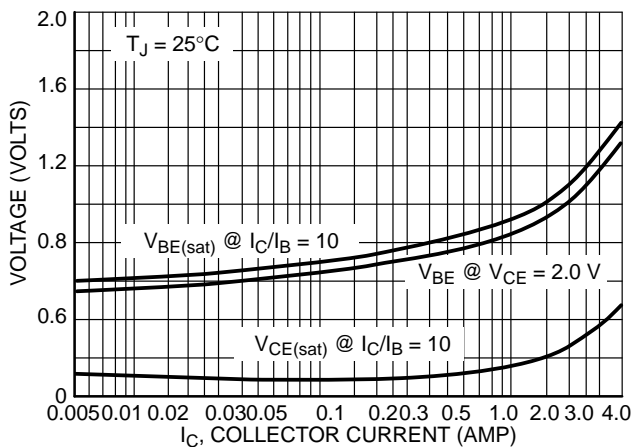


Figure 3. "On" Voltage

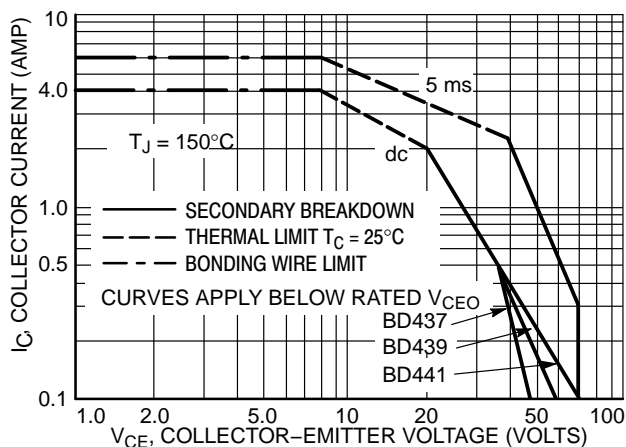
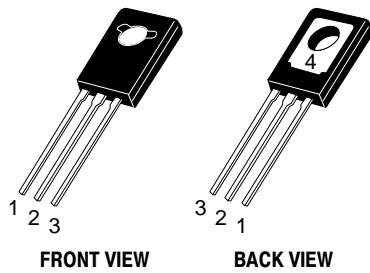


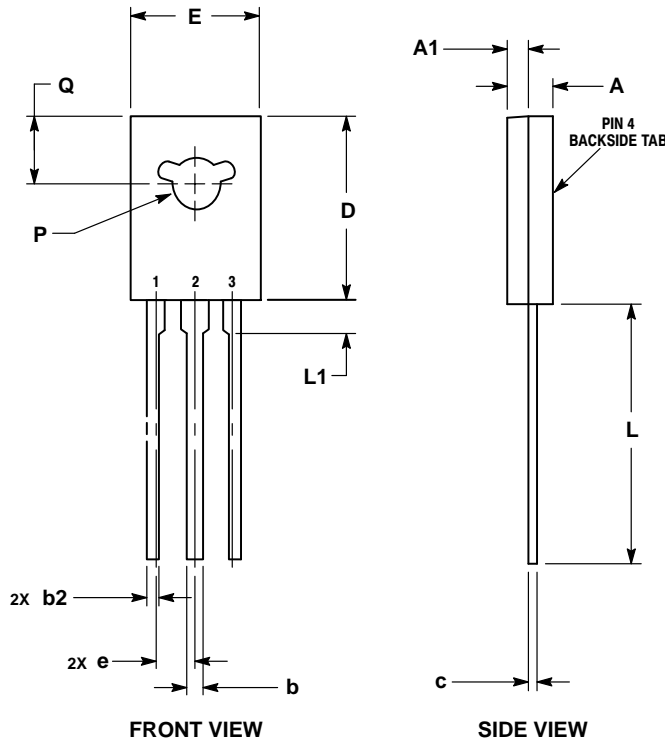
Figure 4. Active Region Safe Operating Area

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PACKAGE DIMENSIONS



TO-225
CASE 77-09
ISSUE AC



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

| DIM | MILLIMETERS | |
|-----|-------------|-------|
| | MIN | MAX |
| A | 2.40 | 3.00 |
| A1 | 1.00 | 1.50 |
| b | 0.60 | 0.90 |
| b2 | 0.51 | 0.88 |
| c | 0.39 | 0.63 |
| D | 10.60 | 11.10 |
| E | 7.40 | 7.80 |
| e | 2.04 | 2.54 |
| L | 14.50 | 16.63 |
| L1 | 1.27 | 2.54 |
| P | 2.90 | 3.30 |
| Q | 3.80 | 4.20 |

STYLE 1:

- PIN 1. EMITTER
- 2, 4. COLLECTOR
3. BASE

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